Establishing criterion validity for the French version of the Screening BAT: A comparison of 30 aphasic patient's performance on the Screening BAT and the MT--86 alpha and beta

Aurélie Garcia, Louise Derieux, Thomas Busigny, Barbara Köpke

Establishing criterion validity for the French version of the Screening BAT:

A comparison of 30 aphasic patient's performance on the Screening BAT and the MT-86 alpha and beta

Garcia, A.[1,2], Derieux, L.[3], Busigny, T.[3] & Köpke, B.[2]

[1] Paul Sabatier University Toulouse (France)
[2] Octogone-Lordat (EA 4156), University Toulouse 2 (France)
[3] Toulouse University Hospital

The Screening BAT is a simple and user-friendly adaptation of the Bilingual Aphasia Test (BAT, Paradis & Libben, 1987; Paradis, 2011) developed for efficient assessment of multilingual aphasic patients (Guihem et al, 2013) and short enough for patients in the acute phase or for quick screening in multilingual patients. The test is based on 17 subtests out of the 32 of the BAT in order to remain comprehensive enough for the establishment of the clinical report of the speech therapist. Despite a strong reduction of the number of items from 472 in the BAT to 117 items, items with increasing complexity were also maintained. All stimuli are selected from the BAT and have been standardized with 65 native speakers of each language (Paradis & Libben, 1987). Eleven languages are freely available for the moment: Arabic, Catalan, English, French, German, Italian, Korean, Portuguese, Russian, Spanish and Turkish. Further versions can easily be adapted for the languages of the BAT (https://www.mcgill.ca/linguistics/research/bat)

For efficient use in clinical practice, however, more information is needed on the validity of a new test. For speech therapists who use a more established test on a daily basis, empirical validity obtained through the comparison of the new test with the established test serving as criterion are particularly interesting. Ivanova & Hallowell (2013) state that criterion validity is evidenced through high correlations between the scores on a new test and on a previously validated test. Indeed, the establishment of correlations between a new test in need of validation and an established test are common in aphasiology and inspired the present study (e.g., Flamand-Roze et al., 2011 ; Peristeri et Tspakini, 2011 ; Ozaeta et Kong, 2012).

Comparing the Screening BAT to the Montreal-Toulouse Aphasia Battery MT86 (Nespoulous et al., 1986)

Why MT86 ?

- The MT 86 exists in a long (M1bêta) and a short (M1alpha) version with content and length similar to the BAT and the Screening BAT.
- Normalisation data are available for both versions (Béland et al, 1993; Dordain et al, 1983) and both are extensively used for aphasia assessment in large parts of France, Belgium and francophone Canada.

Tabl. 1 Sub-tests common to M1 alpha, M1 bêta and Screening BAT

Type of subtest	Screening BAT	M1 alpha	M1 bêta
Oral comprehension (matching task)	Word-object (N=5) Sentence-picture (N= 10)	Word-picture (N=5) Sentence-picture (N= 6)	Word-picture (N=9) Sentence-picture (N= 38)
Picture/object naming	6 objects	16 pictures	31 pictures
Written comprehension	4 words 4 sentences	5 words 6 sentences	5 words 8 sentences
Reading	5 words 4 sentences	10 words 3 sentences	25 words 5 pseudo-words 3 sentences
Dictation	2 words 1 sentence	3 words 1 sentence	10 words 3 sentences
Copy	2 words	1 sentence	3 words 1 sentence
Repetition	7 words 5 pseudo-words 3 sentences	10 words 3 sentences	25 words 5 pseudo-words 3 sentences

Scores on subtests have been grouped following main skills involved: oral comprehension, oral production, written comprehension, transposition/transcoding.

Method

Participants:

Inclusion :

- monolingual francophone aphasic patients in the chronic stage (> 6 month) following left hemisphere stroke
- assessment with MT86, if any, > than 3 month

Sample description :

- 30 aphasic patients with chronic aphasia (onset: M=8;7, range= 8 month - 25 years)
- 17 males and 13 females
- mean age 66,4 years (ET 12,89; range= 48 - 88 years)
- all but 4 participants (13%) had more than 9 years of education
- 22 present non fluent aphasia (73%), 8 fluent aphasia (27%)

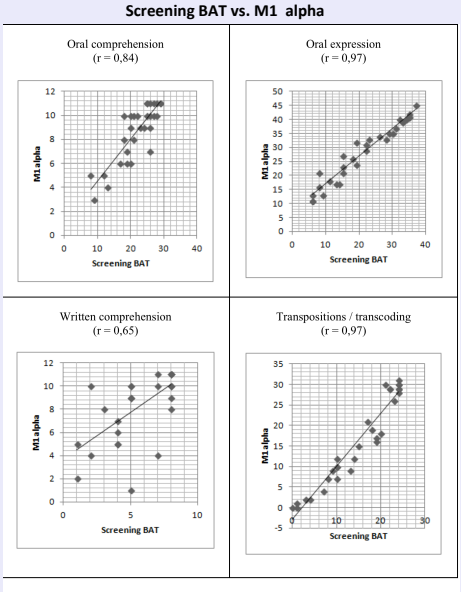
N°	Sex	Age	Laterality	Education level	Aphasia type	Post-onset	Lesion type	Hemi plegia
1	M	50	R	9 ≥	non fluent	1 ;11	Ischemic stroke LH	yes
2	F	75	R	9 ≥	non fluent	6 ;10	Ischemic stroke LH	yes
3	F	75	R	9 ≥	non fluent	14	n.i.	yes
4	F	51	R	9 ≥	non fluent	7	n.i.	yes
5	F	48	R	9 ≥	fluent	4 ;2	Ischemic stroke LH	no
6	M	81	R	9 ≥	non fluent	3 ;8	n.i.	yes
7	F	63	R	9 ≥	fluent	15	n.i.	yes
8	F	53	R	9 ≥	fluent	7	Ischemic stroke LH	yes
9	M	52	R	9 ≥	non fluent	25 ;1	n.i.	yes
10	M	52	R	9 ≥	fluent	8	n.i.	yes
11	M	82	R	< 9	non fluent	4	Ischemic sylvian stroke LH	yes
12	M	56	R	9 ≥	non fluent	2 ;2	Ischemic sylvian stroke LH	yes
13	F	56	L	9 ≥	fluent	1 ;3	n.i.	no
14	F	68	R	9 ≥	non fluent	14	n.i.	yes
15	M	81	R	< 9	non fluent	1 ;4	Ischemic sylvian stroke LH	yes
16	M	57	R	9 ≥	non fluent	17	n.i.	yes
17	F	67	R	9 ≥	non fluent	14	Ischemic stroke LH	no
18	F	50	L	9 ≥	non fluent	12 ;9	Ischemic sylvian stroke LH	yes
19	M	66	R	9 ≥	fluent	0 ;11	Ischemic sylvian stroke LH	no
20	M	80	R	9 ≥	non fluent	9 ;9	Ischemic sylvian stroke LH	no
21	F	49	L	9 ≥	fluent	0 ;9	Ischemic sylvian stroke LH	no
22	M	65	R	9 ≥	non fluent	3 ;10	Ischemic stroke LH	no
23	M	65	R	9 ≥	non fluent	5 ;10	Ischemic stroke LH	yes
24	M	87	R	9 ≥	non fluent	5 ;6	Ischemic stroke brainstem	no
25	M	72	R	< 9	non fluent	0 ;11	n.i.	yes
26	F	73	R	9 ≥	non fluent	10 ;3	Ischemic stroke LH	yes
27	F	88	R	9 ≥	non fluent	0 ;9	Ischemic sylvian stroke LH	yes
28	M	82	R	9 ≥	non fluent	1 ;5	Ischemic sylvian stroke LH	yes
29	M	83	R	< 9	non fluent	5	Sylvian stroke LH	yes
30	M	66	R	9 ≥	fluent	0 ;8	Ischemic sylvian stroke LH	non

Procedure:

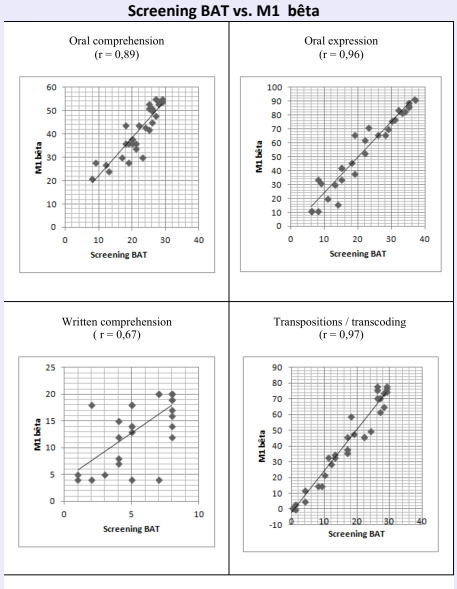
- All patients were tested in 2 sessions in their homes
- Order of presentation of the different tests was counterbalanced through cross-over design

Results: Pearson correlations

Screening BAT vs. M1 alpha



Screening BAT vs. M1 bêta



Results

Test duration

	Screening BAT	M1 alpha	M1 bêta
Mean duration	29 mn	25 mn	1:15
Minimal duration	15 mn	08 mn	43 mn
Maximal duration	48 mn	47 mn	2 :20

Pearson correlations M1 alpha vs M1 bêta:

- Oral comprehension r= 0.80
- Oral expression r= 0.97
- Written comprehension r= 0.88
- Transpositions / transcoding r=0.98

Summary

- Scores of the Screening BAT and both versions of MT86 are highly correlated for oral comprehension, oral expression and transpositions/transcoding.
- Correlations between the scores for written comprehension are weaker but still significant.
- The M1 alpha and the M1 bêta are highly correlated for the four skills tested.

Conclusion

- The Screening BAT is a valid assessment tool for patients with aphasia.
- Short versions of aphasia tests are similar in validity to the long versions.

References:
Béland, R., Lecours, A.R., Giroux, F., Bois, M. (1993). The MT-86β aphasia battery: a subset of normative data in relation to age and level of school education (Part II). *Aphasiology, 7*(4) : 359-382.
Dordain, M., Nespoulous, J-L., Bourdeau, M. et Lecours, A.R. (1983). Capacités verbales d'adultes normaux soumis à un protocole linguistique de l'aphasie. *Acta Neurologica Belgica, 83* (1) : 5-16.
Flamand-Roze et al. (2011). Validation of a new language screening tool for patients with acute stroke : the Language Screening Test (LAST). *Stroke, 42*: 1224-1229.
Guilhem, V., Gomes, S., Prod'homme, K. & Köpke, B. (2013). Le screening BAT : un outil d'évaluation rapide disponible en 8 langues et adaptable à toutes les langues du BAT. *Rééducation orthophonique, 253*: 121-141.
Ivanova, M. V., Hallowell, B. (2013). A tutorial on aphasia test development in any language : key substantive and psychometric considerations. *Aphasiology, 27* (8): 891–920.
Muñoz M.L. & Marquardt T.P. (2008). The performance of neurologically normal bilingual speakers of Spanish and English on the short version of the Bilingual Aphasia Test. Aphasiology, 22 (1), 3-19.
Nespoulous, J-L., Lecours, A.R, Lafond, D., Lemay, A., Puel, M., Joanette, J., Cot, F. et Rascol, A. 1992). *Protocole Montréal - Toulouse d'examen linguistique de l'aphasie*. Isbergues : Ortho Édition.
Paradis, M. (2011). Principles underlying the Bilingual Aphasia Test (BAT) and its uses. Clinical Linguistics and Phonetics, 25 (6-7), 427-443.
Paradis, M. & Libben, G. (1987). The assessment of bilingual aphasia. Hillsdale (NJ): Lawrence Earlbaum Associates.

Sciences of Aphasia,
September 17th – 22nd 2015, Aveiro, Portugal

Screening BAT: contact bkopke@univ-tlse2.fr (Barbara Köpke)